DOCUMENT RESUME

ED 311 399 CS 009 787

AUTHOR Caswell, Ruth M.; Heim, Kathy
TITLE The Use of Mapping as a Mediating Strategy by Poor Readers To Produce Written Summaries.
PUB DATE Apr 88
NOTE 19p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Comparative Analysis; Grade 5; Intermediate Grades; *Reading Comprehension; Reading Difficulties; Reading Research; *Reading Strategies; *Reading Writing Relationship; Writing Difficulties; *Writing Improvement; Writing Research
IDENTIFIERS Education Consolidation Improvement Act Chapter 1; *Mapping; Metropolitan Achievement Tests; *Summarization

ABSTRACT

A study examined the effect of using mapping as a mediating strategy to produce written summaries and improve comprehension of poor readers in the fifth grade. Twenty-three students from two Chapter 1 classrooms in northern Illinois, all classified as poor readers, were divided into experimental (13 children) and control (10 children) groups. The experimental group read, constructed maps, discussed and revised maps, and used revised maps as a summary-writing aid. Summaries were evaluated for production with word and sentence counts and content by a clausal analysis and a percentage of idea units. Comprehension measures were a story assessment and a standardized reading test. Significant differences between groups were obtained for all the summary measures. The experimental group summaries had more complex sentences, contained more important information, and increased in amount produced. Significant differences were not obtained for either of the comprehension measures. Poor readers benefited from the use of mapping as a mediating strategy to produce written summaries. (Two tables of data are included, and 19 references are attached.) (Author/MG)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED311399

The Use of Mapping as a Mediating Strategy by Poor Readers to Produce Written Summaries

Ruth M. Caswell

Texas Woman's University

Kathy Heim

Erie School District

Paper Presented at the
American Educational Research Association

New Orleans, April 1988

Running Head: MAPPING FOR SUMMARIES

CS009787

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Ruth M. Caswell

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Abstract

This study examined the effect of using mapping as a mediating strategy to produce written summaries and improve comprehension of fifth-grade poor readers. Twenty-three students, all classified as poor readers, from two Chapter 1 classrooms served as experimental (n=13) and control groups (n=10). The experimental group read, constructed maps, discussed and revised maps, and used revised maps as a summary writing aid. Summaries were evaluated for production with word and sentence counts and content by a clausal analysis and a percentage of idea units. Comprehension measures were a story assessment and standardized reading test. Significant differences between groups were obtained for all the summary measures. The experimental group summaries had more complex sentences, contained more important information, and increased in amount produced. Significant differences were not obtained for either of the comprehension measures. Poor readers benefited from the use of mapping as a mediating strategy to produce written summaries.

The Use of Mapping as a Mediating Strategy

with Poor Readers to Produce Written Summaries

Summarizing is generally beneficial to the understanding of discourse. The process of summarizing assists readers to clarify the meaning of what has been read and aids comprehension monitoring and recall (Hidi & Anderson, 1986). When students generate summary sentences after reading, their comprehension improves (Wittorck, 1982). Therefore, producing summaries should aid comprehension.

A summary is a condensation or reduction of the information accessible to a student and represents the gist of the discourse (Johnson, 1983). Summarizing involves manipulation of the information presented in discourse. To condense the information and maintain the original, important ideas, the student must perform operations with the information read. This requires comprehension, evaluation, and condensation by the reader (Hidi & Anderson, 1986). To produce summaries, students' decisions involve what information is important and how to include, eliminate, or transform salient ideas into a coherent written product.

How do students summarize? We can glean some insights from two summarization models proposed for adults to describe how the information included in a summary is determined. Kintsch and van Dijk (1978) propose that a macrostructure, representing the gist of the original text, is developed as adults read. This macrostructure, or information to be included in a summary, is determined by macrorules, i.e., processes of deletion.

generalization, and integration. In another model, Rumelhart (1977) asserts that knowledge of story structure is used to reduce the information to the most important points. Information higher in a tree diagram is expected to be better remembered and thus included in summaries than information lower in the tree diagram. In both models, summary formation is proposed as a direct by-product of the comprehension process.

For younger students, the summarizing process may not conform to the adult models, or these students may lack the expertise to summarize proficiently. Brown, Campione and Day (1981) assert that summarizing is the deliberate result of effort and judgment. When asked to summarize stories of some length and complexity, students must differentiate between important elements and make judgments on what to include and omit. The implication is that summarizing is not a direct by-product of comprehension. Summarizing is also a late developing skill (Brown and Day, 1983) as indicated by developmental differences in macrorule application. Elementary students apparently do not use complex rules as efficiently as older students and adults.

Although elementary students may not be as adept at the summarizing process nor use complex rules as efficiently as older students, they can produce written summaries. Students seem to have difficulty with certain aspects of the summarizing task and need either instruction or teacher guidance for producing adequate summaries. Brown, Day, and Jones (1983) found that fifth-grade students use less sophisticated strategies but improve with planning. Fourth- and fifth-grade students (Taylor, 1986)

produced written summaries but had difficulty identifying the main idea. Middle-grade students improved their comprehension when direct instruction in summarization was provided (Bean & Steenwyk, 1984; Doctorow, Marks, & Wittrock, 1978; McNeil & Donant, 1982). Successful fifth-grade students can produce summaries and recognize differences in quality of summary examples but have some difficulty reflecting on the summary process (Garner, Belcher, Winfield, & Smith, 1985). Thus, when given guidance or instruction, written summaries are within the capabilities of elementary students.

Many poor readers, however, produce inadequate summaries which may result from comprehension failure and/or a lack of summarizing proficiency. Hidi and Anderson (1986) indicate inadequate summarization is likely to result from writers making inappropriate choices as to what is important in the original texts, and from their inability to coordinate and integrate different parts of discourse. Among poor readers, difficulty with these aspects is well documented by research. They have difficulty identifying the important information and formulating text into a gist (Winograd, 1984), are not as efficient as good readers at producing summaries (Garner, Belcher,Winfield, & Smith, 1985), and do not use summarizing as a self-directed strategy (Brown & Day, 1983). In addition, they also lack, or do not employ, efficient strategies for remembering the information read (Paris & Myers, 1981). Many poor readers need to employ strategies which assist with organizing and remembering as well as integrating information from various parts of discourse. In

addition, these students need practice with the appropriate strategies and teacher guidance to help monitor choices of important information.

Assisting poor readers, therefore, to employ a mediating strategy that helps them to identify, integrate, and remember important information would appear beneficial for improving written summaries. Mapping, the selected mediating strategy, shows the relationships among the ideas in a text or among events in a story (Hanf, 1971; Sinatra, Stahl-Gemake, & Berg, 1984). The constructed diagram represents the macrostructure of the discourse and often serves as a memory aid. To construct maps, students must identify and organize important information, factors which aid comprehension (Idol-Maestas, 1985; Sinatra, et al., 1984) These factors are also important for summary writing. Many poor readers, however, need guidance in learning to construct maps, to select salient information, and practice with strategy use. Since students who wrote summaries improved their comprehension, poor readers would appear to benefit from applying the mediating strategy, mapping, to aid written summary production.

Considering these concerns, two questions were proposed for this study. First, would the content of poor readers' written summaries change as a result of using the mediating strategy? Second, would the intervention improve comprehension of stories and test passages?

Methods

Two intact Chapter I classrooms from a school district in northern Illinois were selected for instructional intervention.

The four-month intervention in natural settings, although yielding some experimenter control, provided information on classroom application which enhanced ecological validity.

Subjects. A total of 23 fifth-grade students from two classrooms participated in the study. Students in one classroom served as the experimental group (n=13) and students in the second classroom served as the control group (n=10). For inclusion in the Chapter I classrooms, all students had scored below the forty-fifth percentile on the SRA Reading Achievement test. The mean achievement test score for the experimental group was 38.5 and for the control group 31.0. The average age for each group was 11.0. The reading instructional period was thirty minutes for four days per week.

Procedures. In both the Chapter I classrooms, students regularly read a variety of books as an integral part of the reading instruction. Students in the control group classroom participated in regular classroom reading activities. Strategies such as ReQuest, Directed Reading-Thinking activities, and shared writing were employed, but the students did not participate in mapping or write summaries as a component of instruction.

The experimental group students used mapping as a strategy to assist in writing summaries of what they read. An introduction to map construction was given before students were asked to apply the strategy independently. The teacher first modeled map construction with easy reading material. Next, the students constructed their own maps, again with easy reading selections and

with teacher feedback. The maps and the student's reasons for the particular diagram were discussed in small groups.

After the mapping introduction, students read and constructed maps, clarified or revised map content, and produced a reader-based summary which was shared with others. Books were read chapter by chapter. A chapter was read independently, mapped, and discussed with the teacher or small group. In these non-risk discussion sessions, students presented reasons for information choices and made changes or additions, as necessary, to their map so that it reflected the important ideas from the material read. From these sessions, the students gained an awareness of the benefits of strategy use. The revised map then served as a guide for writing a chapter summary. The goal was to read a chapter per week: thus, reading, map construction, discussion and revision sessions, and summary writing took four days.

Instruments. Three evaluation measures, a summarization task, a story assessment passage, and the comprehension subtest of the Metropolitan Achievement Test, Reading Instructional were administered as pre- and posttests.

Differences in summary production were determined with a word and sentence count of written summaries. To elicit information on the changes in quality and content of the summaries, two additional measures of clausal analysis and the percentage of executive summary idea units were examined. Since one of the purposes of a summary is to collapse and integrate information across paragraphs, the clausal analysis was developed to compare

qualitative aspects of the sentences produced. The clausal unit analysis was based on four factors: independent clauses, dependent clauses, embedded clauses, and compound predicates. Three independent raters counted the number of these factors, each receiving one count, in each summary. The interrater reliability was .97.

To compare the summary content, executive summary idea units were used. Reading experts read the passages and wrote a summary. These experts then generated a constrained summary (executive) limited to 60 words. A template of idea units was constructed from the constrained summaries of experts. Each template consisted of eight idea units which coordinated with important story information (setting, problem, goal, actions, outcome) in the passage. For comparison purposes, the number of idea units in a student summary was divided by the number of executive idea units to obtain a percentage.

To determine whether the intervention would transfer to comprehension tasks, a standardized test and a story assessment measure were used. The comprehension subtest of the Metropolitan Achievement Test, Reading Instructional (The Psychological Corporation, 1978) and a story assessment passage with ten multiple-choice questions answered from memory were administered. The two passages for story assessment ("Lane Four" and "Shooting the Rapids" from Horizons by Houghton Mifflin Company, 1979) were counterbalanced in pre- and posttest administration. Students read the passage, answered the questions and wrote a summary, both from memory. These passages which were at fourth grade reading

level were 1260 and 1294 words in length, respectively. Reliability of the story assessment passages was determined by previous administration to two fifth-grade, regular classrooms (n=40) in a separate school district. Reliability was .71 for the "Lane Four" passage and .76 for the "Shooting the Rapids" passage.

Analysis. In the pretest-posttest control group design, the experimental and control classes were the independent variables. The scores on the three evaluation measures were the dependent variables. For the written summaries, the number of words and sentences were used as production measure scores; the number of clausal units and the percentage of idea units were selected as the quality and content scores. The raw scores on the comprehension test (0-60) and the story assessment (0-10) were used in computation. For each dependent variable, the scores were analyzed with an ANCOVA with pretest scores entered as a covariate.

Results

Changes in students' written summaries were determined by production, quality and content measures. Significant differences were found between groups in the summary production measures, number of words F (1, 20) = 8.76, $p<.01$ and number of sentences F (1, 20) = 13.30, $p<.01$. The pretest means, adjusted means, and standard deviations are given in Table 1. For many students, increased summary production may not be the purpose of summary writing since summaries are defined as a reduction or condensation of available information. For these poor readers, however, increased production was a goal. As Table 1 indicates, both

experimental and control groups averaged no more than one sentence and less than 15 words per summary in the pretest. Therefore, producing adequate written summaries required an increase in production to convey the important ideas in the discourse.

Significant differences were also found in the quality and content of the summaries. The qualitative aspects of the sentences in the summaries were measured by a clausal analysis. Significant differences in the number of clauses were found between groups, F (1, 20) = 5.60, $p<.05$. Measured by the percentage of idea units, significant differences were also found in the content, F (1, 20) = 14.23, $p=.001$. The pretest means, adjusted means, and standard deviations are given in Table 1. For these poor readers, increased summary production also resulted in the inclusion of more important information, a criterion for adequate summaries, and more complex sentences to convey the information.

Insert Table 1 about here

The transfer to comprehension measures did not occur. Significant differences were not found between the experimental and control classes on the standardized test measure nor on the story assessment measure. The pretest means, adjusted means, and standard deviations are given in Table 2. For the experimental group, a gain was made from pretest to posttest in standardized test score: however, this gain was not sufficient for significant results.

Insert Table 2 about here

Discussion

For the poor readers in this study, the mapping intervention resulted in improvement in the quality and content of written summaries. Several aspects of this interactive strategy related to the problems which many poor readers bring to a summarizing task. The non-risk discussion and revision sessions provided aid when students identified inappropriate choices as to what is important in the original text (Hidi & Anderson, 1986; Winograd, 1984). The map construction provided memory and comprehension monitoring assistance (Paris & Myers, 1981; Ryan, 1983) and gave students much practice with task appropriate strategies (Palinscar & Brown, 1983). The interactive aspects of the mediating strategy probably contributed to its success and concurs with other multiple component strategy research (Palinscar & Brown, 1983). Although no attempt was made to identify the merit of particular aspects, using the mapping strategy helped poor readers to produce better summaries.

The advantages of using mapping (Hanf, 1971; Sinatra, Stahl-Gemake, & Berg, 1984) are well documented, but poor readers may not be able to apply the strategy on their own. The students here needed teacher guidance in non-risk discussions to clarify choices of important ideas and adequate time to implement necessary revisions. Teacher observations also indicated the step

from mapping introduction to self-directed strategy application is too large for many poor readers to accomplish independently.

The intervention strategy did not transfer to the comprehension measures of a standardized test and story assessment. Other researchers found that direct instruction in summarization (Bean & Steenwyk, 1984; McNeil & Donant, 1982) and generating one-two sentence summaries (Wittrock, 1982) improved comprehension. None of these studies, however, focused particularly on poor readers who have difficulty with identifying and remembering important points. Idol-Maestas (1985) found mapping improved story comprehension but did not transfer to a standardized test measure. Further studies are needed need to investigate comprehension improvement using measures other than a standardized test.

Because of the quasi-experimental nature of the study, the results cannot be generalized to other classes of poor readers. The interactive mediating strategy was employed in natural classroom instruction and documented what worked for these students. Further research might consider strategy components separately or describe the complex interactions that are involved in implementing a mediating strategy in a Chapter I classroom. Further study is also needed to confirm the results of the mapping intervention with other groups of poor readers.

The poor readers, in this study, employed the mapping strategy to produce written summaries with success. The successful strategy use has direct application for classroom instruction.

References

Bean, T. & Steenwyk, F. (1984). The effect of three forms of summarization instruction on sixth graders' summary writing and comprehension. Journal of Reading Behavior, 16 (4), 297-306.

Brown, A., Campione, J., & Day, J. (1981). Learning to learn: On training students to learn from texts. Educational Researcher, 10, 14-21.

Brown, A. & Day, J. (1983). Macrorules for summarizing texts: The development of expertise. Journal of Verbal Learning and Verbal Behavior, 22 1-14.

Brown, A., Day, J., & Jones, R. (1983). The development of plans for summarizing texts. Child Development, 54, 968-979.

Doctorow, M., Marks, C., & Wittrock, M. (1978). Generative processes in reading comprehension. Journal of Educational Psychology, 70, 109-118.

Garner, R., Belcher, V., Winfield, E., & Smith, T. (1985). Multiple measures of text summarization proficiency: What can fifth-grade students do? Research in the Teaching of English, 19, 140-153.

Hanf, M. (1971). Mapping: A technique for translating reading into thinking. Journal of Reading, 14, 225-230, 270.

Hidi, S. & Anderson, V. (1986). Producing written

summaries: Task demands, cognitive operations, and implications for instruction. Review of Educational Research, 56,(4), 473-493.

Idol-Maestas, L. (1985). Group story mapping: A comprehension strategy for both skilled and unskilled readers (Technical Report No. 363). Urbana-Champaign: University of Illinois.

Johnson, N. (1983). What do you do is you can't tell the whole story? The development of summarization skills. In K. E. Nelson (Ed.), Children's Language, 4, 315-383. Hillsdale, NJ: Lawrence Erlbaum.

Kintsch, W., & van Dijk, R. (1978). Toward a model of text comprehension and production. Psychological Review, 85, 363-394.

McNeil, J. & Donant, L. (1982). Summarizing strategy for improving reading comprehension. In J. Niles & L. Harris (Eds.), New Inquiries in Reading and Instruction Thirty-first Yearbook of the National Reading Conference. Washington, D. C. : National Reading Conference.

Palinscar, A. & Brown, A. (1985). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. Cognition and Instruction, 1, 117-175.

Paris, S. & Myers II, M. (1981). Comprehension monitoring, memory, and study strategies of good and poor readers. Journal of Reading Behavior, 13(1), 5-22.

Rumelhart, D. (1977). Understanding and summarizing brief stories. In D. LaBerge & S. Samuels (Eds.), Basic processes in reading: Perception and comprehension. Hillsdale, NJ: Lawrence Erlbaum.

Sinatra, R., Stahl-Gemake, J., & Berg, D. (1984). Improving reading comprehension of disabled readers through semantic mapping. The Reading Teacher, 38, 22-29.

Taylor, K. (1986). Summary writing by young children. Reading Research Quarterly, 21(2), 193-208.

Winograd, P. (1984). Strategic difficulties in summarizing texts. Reading Research Quarterly, 19, 404-425.

Wittrock, M. (1982). Three studies of generative reading comprehension. In J. Niles & L. Harris (Eds.), New inquiries in reading research and instruction (Thirty-first Yearbook of the National Reading Conference). Washington, D. C.: National Reading Conference.

Table 1

Means, Adjusted Means, and Standard Deviations for Summary Measures

		Production				Quality		Content	
		Number of Words		Number of Sentences		Number of Clauses		Percentage of Idea Units	
		Pre	Po*	Pre	Po*	Pre	Po*	Pre	Po*
Experimental	$\bar{X}$	11.38	32.07	.61	3.09	3.42	5.64	18.28	41.43
Group	SD	10.39	18.36	.77	1.12	5.20	2.84	10.97	12.89
Control	$\bar{X}$	14.40	14.96	1.00	1.49	2.52	3.21	20.00	22.42
Group	SD	6.98	7.15	.00	.70	.87	1.55	8.75	9.86

* adjusted means

Table 2

Means, Adjusted Means, and Standard Deviations for Comprehension Measures

		Standardized Test		Story Assessment	
		Pre	Po*	Pre	Po*
Experimental	$\bar{X}$	40.85	48.80	5.23	4.41
Group	SD	11.98	6.32	2.13	1.89
Control Group	$\bar{X}$	49.00	47.31	5.60	5.08
	SD	5.50	7.44	1.26	1.52

* adjusted means